Space Weather Forecast

Issued on Saturday 25 January 2025 at 12:13 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: A chance of G1-G2 geomagnetic storms this UTC weekend, with a ongoing chance of isolated Moderate solar flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity was at Moderate levels, with peak activity a Moderate flare at 24/2104UTC from AR3961 in the southwest disk.

There are currently six numbered sunspot regions on the Earth-facing disc, and one small unnumbered regions. The largest, most active and nominally most complex region remains AR3961 in the southwestern quadrant. The other region of potential note is AR3971 in the northwest. Other regions generally small and seemingly stable.

No Earth-directed Coronal Mass Ejections (CMEs) feature in this forecast. A C8.8 flare at 24/1620UTC caused some very minor dimming near central disc, however no clear CME was visible in imagery, with any ejecta likely assumed slow.

Solar Wind / Geomagnetic Activity: The solar wind fell from Slightly Elevated levels, around 450km/s, to current background speeds of around 390 km/s. The interplanetary magnetic field (IMF) was weak, with the important north-south component varying only weakly.

The net result of the above solar wind measures was Quiet geomagnetic activity.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Generally Moderate solar activity expected with a likelihood of isolated Moderate solar flares and a slight chance of isolated Strong flares.

Solar Wind / Geomagnetic Activity: Up to two CMEs (coronal mass ejections) may affect Earth in the period. The first a 21 January CME, which had a risk of narrowly glancing around 25/0600UTC and may have already missed Earth. The second a potentially fuller glance from a 22 January CME, due 25/1800UTC. No new coronal holes feature in the forecast.

Quiet to Unsettled activity (Kp1-3) is expected in general, but with a chance of Minor to Moderate G1-G2 geomagnetic storms through days 1-2 (25-26 Jan) in association with potential CME arrivals,

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with a slight chance of Strong G3 geomagnetic storm intervals.

Energetic Particles / Solar Radiation: A slight chance of enhancements exceeding the S1 Minor Radiation Storm threshold should any notable solar flares occur.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	30	5	5
Strong	G3	No	10	10	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	60	60	60	60
Very Active	R3-R5 (X Class)	No	10	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	15	15
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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